MEE427 DESIGN ASSIGNMENT

A company bought some armature controlled brushed DC motor with integrated encoder and reduction (ratio is unknown) in order to use in some robotic applications. However, it is not supplied detailed information about the motors in their datasheet. Only the following information are known;

- Nominal voltage is 12 Volt
- Overall system has an integrated quadrature encoder with 64 counts per revolution (CPR), which measures the output of the motor shaft (not the gearbox output)

Also, it is known that the company has some DC motor drivers that are compatible with the DC motors. Motor driver expects a digital signal with 5 Volt to determine the direction and a PWM signal between the frequency 500 Hz – 1000 Hz to adjust the armature voltage on the motor terminals.

Suppose that you are currently working for this company as a mechatronics engineer. The company wants to use the mentioned actuators in a multiple degrees of freedom robot system, therefore it is important to understand their characteristics. You are given a task that all the actuators will be transformed to a microcontroller based servo systems, where the inputs would be PWM signals that defines the reference position.

What questions would you ask to your team leader in order to solve the task you are given?

How would you handle the procedure?

Explain your steps briefly with your own sentences.